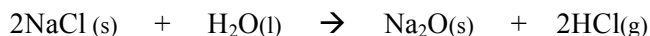
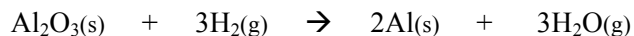
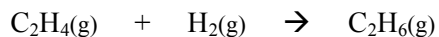
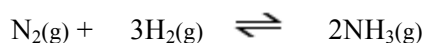


Free Energy Worksheet

Calculate the free energy change for the following processes, using the tabulated free energy values at the back of the book. Are these reactions spontaneous?



For the following reaction:



Calculate ΔG at 298 K for a reaction mixture that has 1.0 atm N_2 , 3.0 atm H_2 , and 0.5 atm NH_3 .

Calculate the equilibrium constant for the reaction in the previous question.

Using the K_a for nitrous acid, calculate the ΔG° for the dissociation of this acid. What is the value of ΔG for the reaction at equilibrium? What is the value of ΔG when $[\text{H}^+]$ is $5.0 \times 10^{-2} \text{ M}$, $[\text{NO}_2^-]$ is $6.0 \times 10^{-4} \text{ M}$, and $[\text{HNO}_2]$ is 0.20 M .